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CERTIFIED MAIL - RRR

July 10, 1987

Director, Waste Management Division
USEPA, Region V
Attn: Mr. Brad Bradley (5HE-12)
230 S. Dearborn Street
Chicago, IL 60604

Director, Illinois Environmental
Protection Agency
Attn: Mr. Ken M. Miller
2200 Churchill Road
Springfield, IL 62706

Re: NL/Taracorp Site
Granite City Illinois
RI/FS Work Plan Addendum

Dear Gentlemen:

The attached revised addendum to the Work Plan is being submitted to address your comments of July 6, 1987, replacing the June 23, 1987 submittal.

Please do not hesitate to contact me at (609) 443-2405 if you should have any questions regarding the attached.

Very truly yours,

Stephen W. Holt
Senior Environmental Engineer

SWH/bt

Attachments

cc: Frank D. Hale, OBG

NL Industries, Inc.
Environmental Control Department
P.O. Box 1090, Hightstown, N.J. 08520 Tel. (609) 443- 2405

ADDENDUM TO WORK PLAN
TARACORP, GRANITE CITY, ILLINOIS
REMEDIAL INVESTIGATION

Background

Two sets of ground water samples were collected as part of the Remedial Investigation at the Taracorp Site in Granite City, Illinois. The monitoring wells sampled had been installed by Taracorp and the State of Illinois. Ground water elevations in all wells were determined on four occasions. The locations of the monitoring wells screened approximately 35 feet below grade are such that triangulation to determine ground water flow direction is not feasible. The presence of cadmium and other metals in the ground water at this depth requires a better definition of ground water quality in this zone as well as a direction of flow. Therefore two additional monitoring wells are to be installed to better define ground water quality and the direction of flow in the portion of the aquifer screened by the existing "deep" wells. This Addendum to the Work Plan has been prepared relative to the additional activities presented below.

Well Installation and Development

Well Installation procedures will be in accordance with Attachment A at the locations identified on Figure 1. Well development will be in accordance with the procedures defined in Attachment A.

Sampling Locations and Procedures

After the proposed wells have been installed and developed they will be sampled in accordance with the Sampling Plan approved on July 30, 1986. The specific procedures for sampling ground water begin on page D-3 of that plan. In addition to the two new wells, four existing wells (G101, G107D, and G108S, G108D) will be sampled. Each well will be sampled twice, approximately 90 days apart. In addition, all monitoring wells on the site will have water levels determined four times approximately 30 days apart during this period to assist in determining the direction of ground water flow.

Analytical Parameters

Table 1 presents the Analytical program for the supplemental studies. In general, new wells will be analyzed for the full list of parameters included in the approved Work Plan for existing wells. Existing wells, as specified above to be sampled, which have been sampled on two occasions during the past year, will only include analyses for those substances detected in the wells to be sampled at concentrations within 50% of the applicable Maximum Concentration Limit (MCL), to permit correlation between the previous data and data to be obtained from the new wells. Table 1 also includes wells where field duplicate samples will be taken.

Quality Assurance

The management of samples after collection and specific procedures for analyses will be in accordance with the Quality Assurance Project Plan which was approved July 30, 1986.

June 18, 1987

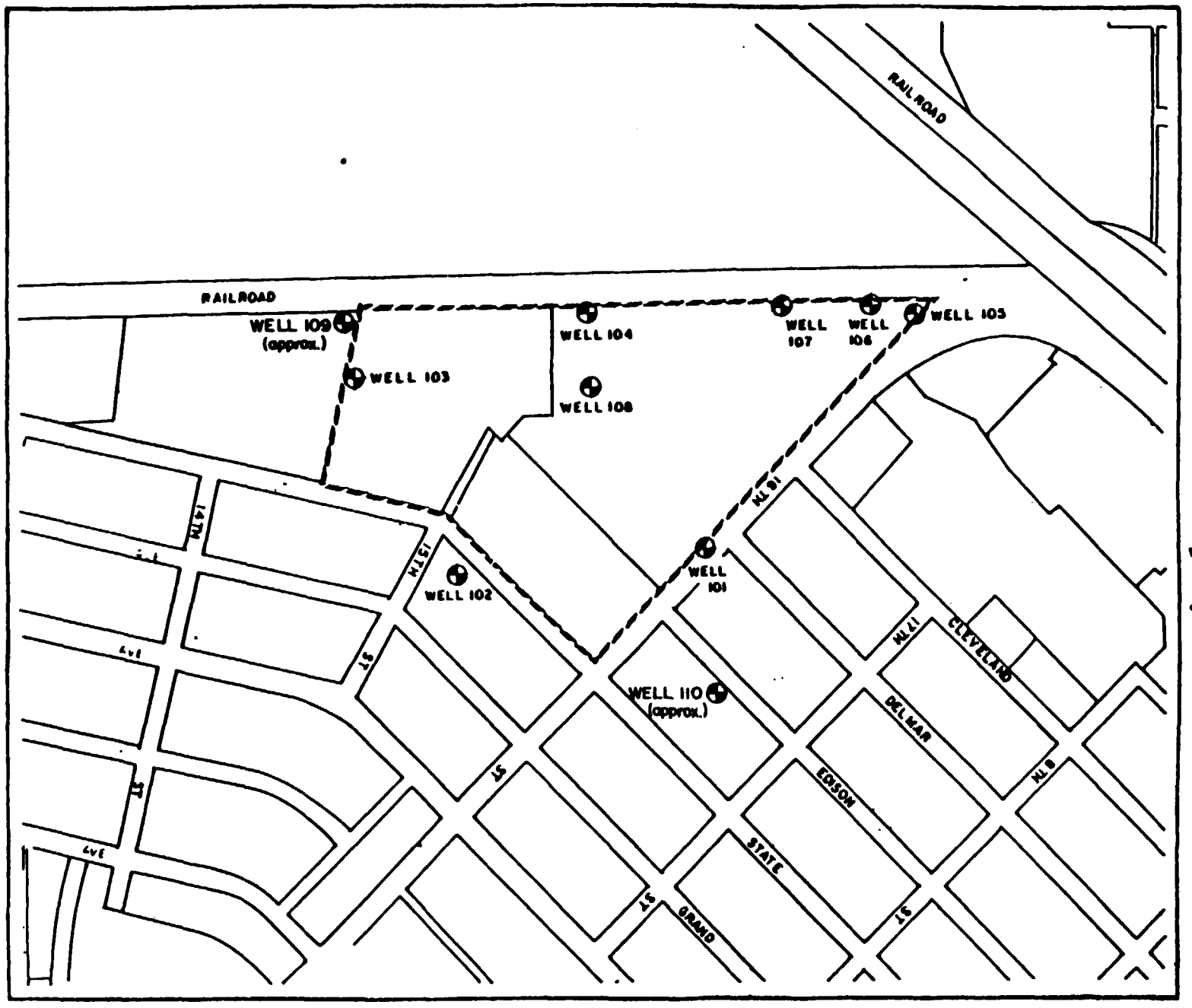

FIGURE 1

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NL INDUSTRIES
GRANITE CITY SITE
GRANITE CITY, ILLINOIS

MONITORING WELL
LOCATION MAP

LEGEND

WELL 101 MONITORING WELL

SITE PERIMETER

SCALE

300 0 300

FEET

ATTACHMENT A

MONITORING WELL INSTALLATION PROCEDURES

1. Drilling/Sampling Procedures

Test borings shall be completed using the hollow stem auger drilling method, to a depth specified by the supervising geologist/engineer. The inside diameter of the augers shall be 3-3/4 inches. The auger stem is to be turned by a rotary drive head which is mounted on a hydraulic feed mechanism.

Samples of the encountered subsurface materials shall be collected continuously. The sampling method employed shall be ASTM D-1586/Split Barrel Sampling using either a standard 2.5' long 2" outside diameter split spoon sampler with a 140 lb. hammer or a 3" outside diameter sampler with a 300 lb. hammer.

A geologist will be on site during the drilling operations to fully describe each soil sample including 1) soil type, 2) color, 3) percent recovery, 4) moisture content, 5) odor and 6) miscellaneous observations such as organic content. The supervising geologist will be responsible for retaining a representative portion of each sample in a one pint glass jar labelled with 1) site, 2) boring number 3) interval sample/interval preserved, 4) date, 5) time of sample collection, and 6) sampling personnel. These data will be reported in the geologist's field book for later reference.

The Drilling Contractor will be responsible for obtaining accurate and representative samples, informing the supervising geologist of changes in drilling pressure, keeping a separate general log of soils encountered including blow counts (i.e. the number of blows from a soil sampling drive weight (140 pounds) required to drive the split spoon sampler in 6-inch increments) and installing monitoring wells to levels directed by the supervising geologist following specifications further outlined in this protocol.

II. Monitoring Well Completion

All monitoring wells will be constructed of PVC flush joint threaded well screen and riser casing (Schedule 40) that will extend from the screened interval to approximately 6" below existing grade. All joints shall be teflon taped. A #10 slot screen will be used with a compatible washed silica sandpack. Other materials utilized for completion will be bentonite pellets, a Portland cement/bentonite grout mix, a lockable, protective steel casing and a protective steel meter box that will be installed flush with existing grade.

The monitoring well installation method for 2" wells shall be to place the screen and casing assembly into the auger string once the screen interval has been selected. At that time a washed silica sand pack will be placed to 2' above the top of screen to prevent screen plugging. Bentonite pellets will then be added to a minimum thickness of two feet above the sand pack. A Portland cement/western bentonite grout (3-5% western bentonite by volume) will be added until the entire aquifer thickness has been sufficiently sealed off from horizontal and/or vertical flow above the screened interval. During placement of sand and grout, frequent measurements will be made to check the height of the sand pack and thickness of bentonite layers by a weighted tape measure.

A protective meter box with cover will be installed flush with existing grade and located above the top of the protective steel outer casing. The meter box will be secured with a Portland cement seal and pad, which will also be flush with ground level. The attached figure provides a section view of a typical flush mounted monitoring well.

The supervising geologist is responsible for recording the exact well details as relayed by the drilling contractor and actual measurement. Both the supervising geologist and drilling contractor are responsible for tabulating all well materials used such as footage of casing and screen or bags of grout, cement or sand.

A field survey control program will be conducted using standard instrument survey techniques to document well location, concrete pad, inner and outer casing elevations, in reference to mean sea level.

III. Well Development

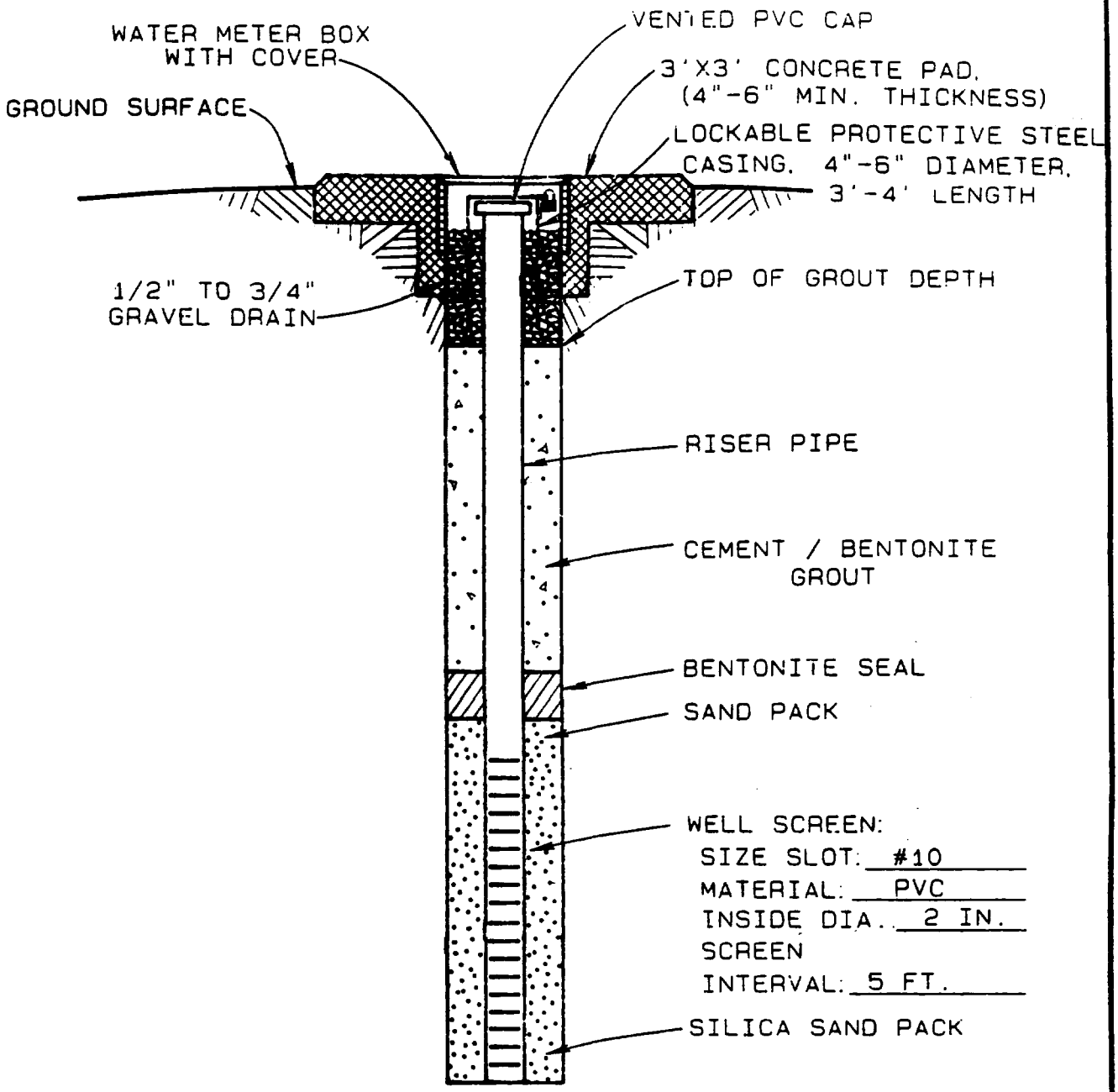
All monitoring wells will be developed (cleared) of all fined grained materials and sediments that have settled in or around the well during installation to insure the screen is transmitting representative portions of the ground water. The development will be by one of three methods, air surging, pumping, or bailing ground water from the well until it yields relatively sediment-free water. A minimum development time of 2 hours will be applied to each well. The determination of which method to use is dependent upon the size and depth of the well and the volume of ground water in the well.

The air surging method of development consists of extending a clean polypropylene tube down into the screened portion of the well. This tube is attached to an air compressor. The compressed air displaces the water and suspends fine grained material from the well. The well is allowed to surge until the ground water clears.

If either the pumping or bailing method is used a decontaminated pump or bailer will be utilized and subsequently decontaminated after each use. Ground water will be pumped from the bottom of the well using a Keck model stainless steel submersible pump or equivalent. Bailing will utilize a stainless steel bailer and new polypropylene rope on the bailer at each well. Pumping or bailing will cease when the ground water yields sediment-free water.

A written log will be maintained of all aspects of well drilling, installation, and development.

FIGURE



TYPICAL FLUSH MOUNTED MONITORING WELL

NOT TO SCALE

WELL015G R42 L1

O'BRIEN & GERE

TABLE 1
TARACORP GRANITE CITY
Remedial Investigation
Supplemental Studies
Analytical Program

Sample Site	Sample (Dates)	Elev (Dates)	Digest Filt.	pH	Cond	TDS	SO_4	Pb	Cd	Cr	Ba	As	Hg	Se	Ag	Sb	Cu	Fe	Mn	Ni	Zn
MW-101	2	4	0	2	2	2	2	2	2	2	0	0	2	0	0	0	0	0	2	2	2	2
MW-102	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MW-103	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MW-104	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MW-105S	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MW-105D	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MW-106S	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MW-106D	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MW-107S	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MW-107D	2	4	2	3	3	3	3	3	5	3	0	0	3	0	0	0	0	0	3	3	3	3
MW-108S	2	4	0	2	2	2	2	2	2	2	0	0	2	0	0	0	0	0	2	2	2	2
MW-108D	2	4	2	2	2	2	2	2	4	2	0	0	2	0	0	0	0	0	2	2	2	2
MW-109	2	4	3	3	3	3	3	3	6	3	3	3	3	3	3	3	3	3	3	3	3	3
MW-110	2	4	3	2	2	2	2	2	5	2	2	2	2	2	2	2	2	2	2	2	2	2